

In the claims:

1. (Currently Amended) A sealed electron beam source for an imaging tube comprising:

a source housing comprising;

a source window forming a sealed structure with said source housing and having a first voltage potential; and

a source electrode having a second voltage potential and generating electrons, said source electrode emitting said electrons through said source window to a target external to said source housing;

wherein said source window comprises feedthroughs for a coolant to flow therein and absorb heat from said source window.

2. (Currently Amended) A source as in claim 1 further comprising:

a coolant channel housing thermally coupled to and at least partially defined by said source housing comprising;

a coolant channel; and

[[a]] said coolant flowing therein, said coolant absorbing heat from said source housing.

3. (Canceled)

4. (Original) A source as in claim 1 wherein said source window allows direct electron emission to pass through said source window to said target and prevents indirect electron emission from passing through said source window.

5. (Original) A source as in claim 1 wherein said source electrode comprises at least one of a thermionic tungsten wire coil, a field emitter array, or a photoemitter.

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6. (Original) A source as in claim 1 wherein said source electrode is a focusing electrode.

7. (Original) A source as in claim 1 wherein said source electrode has a variable potential.

8. (Original) A source as in claim 1 further comprising a grid coupled between said source electrode and said target, said grid focusing said electrons.

9. (Original) A source as in claim 1 wherein the sealed electron beam source is a complete and separate sub-assembly of an imaging tube.

10. (Currently Amended) ~~A sealed electron beam source system for an~~ An imaging tube comprising:

a rotating target having a third voltage potential and decelerating electrons to generate x-rays; and

a sealed electron beam source external and separate from said target and separating a source interior from a low-pressure cavity containing said rotating target comprising;

a source housing comprising;

a source window having a first voltage potential that is approximately equal to said third voltage potential; and

a source electrode having a second voltage potential and generating said electrons, said source electrode emitting said electrons through said source window to said target.

11. (Canceled)

12. (Original) A system as in claim 10 further comprising:

a coolant channel housing thermally coupled to and at least partially defined by said source housing comprising;

a coolant channel; and

a coolant flowing therein, said coolant absorbing heat from said source housing.

13. (Currently Amended) A system as in claim 10 further comprising:

a frame coupled within the imaging tube; [[and]]

[[a]] said low-pressured cavity fluidically coupled between said frame and said target, and said low-pressured cavity at least partially defined by said frame, said target, and said sealed electron beam source;

said low-pressured cavity is at least partially exhausted or filled with a low-pressure gas.

14. (Original) A system as in claim 13 wherein said low-pressure gas comprises at least one of a low-Z substance, helium, nitrogen, or argon.

15. (Original) A system as in claim 10 wherein said sealed electron beam source is directed at said target at a glancing angle.

16. (Original) A system as in claim 10 wherein said source window allows direct electron emission to pass through said source window to said target and prevents indirect electron emission from passing through said source window.

17. (Currently Amended) A method of supplying and directing electrons on a target within an imaging tube comprising:

forming a source housing over a source electrode;

sealing the source housing;

forming a low-pressure cavity containing said source housing and a target;
at least partially filling said cavity with a low-pressure gas;

generating and emitting electrons from said source electrode; and

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directing said electrons through a source window to [[a]] said target.

18. (Original) A method as in claim 17 wherein directing said electrons through a source window further comprises:

allowing direct electron emission to pass through said source window;
and

preventing indirect electrons from passing through said source window.

19. (Original) A method as in claim 17 further comprising cooling said source housing via a coolant channel housing.

20. (Currently Amended) A method as in claim 17 further comprising utilizing said low-pressured gas to enhance heat transfer between said target and a frame of the imaging tube.

21. (New) A source as in claim 1 wherein said first voltage potential is approximately equal to a third voltage potential of said target.

22. (New) A source as in claim 8 wherein said grid is coupled within said source housing.

23. (New) An imaging tube as in claim 10 further comprising:

a frame;

an x-ray window coupled to said frame; and

a coolant channel housing coupled to said frame and cooling said x-ray window.

24. (New) An imaging tube as in claim 23 wherein said source window comprises feedthroughs and said coolant channel housing comprises coolant channels that are fluidically coupled to said feedthroughs.